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EDITORIAL

What is the value of a systematic review?

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Systematic reviews of the literature are being performed and submitted for consideration for publication with increasing frequency. In any given month, the *Journal of Shoulder and Elbow Surgery* (JSES) receives more than 10 of these reviews. In a single month, 3 different systematic reviews were submitted to this journal on the singular topic of reverse shoulder arthroplasty for the treatment of proximal humeral fractures.

Computerized word processing and Internet-based manuscript submission systems, such as the one used by this journal, have greatly facilitated scientific manuscript submission. Although this has had the favorable effect of providing a greater pool of manuscripts to potentially contribute to the scientific knowledge base, it has also resulted in many journals being overwhelmed with an inordinate amount of submissions. This has even resulted in some journals requiring a processing fee for manuscript submission. The facile mechanisms of manuscript submission have undoubtedly increased the pressure on many academic surgeons to publish more manuscripts, leading to additional increases in manuscript submissions.

Systematic reviews seemingly provide an easy pathway for manuscript production. Online databases greatly simplify the process of investigating a topic. A systematic review article could potentially be initiated and completed by a single individual with nothing more than a personal computer with Internet access. It is not surprising that more and more of these manuscripts are being submitted to the JSES. I can personally attest that the methods used in most of the systematic reviews received by this journal are sound, leading one to question, "Why aren't more systematic reviews published?"

The number of pages available for scientific publication has not increased at the rate of manuscript submissions, and this has created a difficult situation for editors. In some instances, studies that use scientifically sound methods and yield valid conclusions are rejected for such reasons as having limited clinical significance.

What is the value of a systematic review? Systematic reviews seek to answer questions that have already been investigated by multiple similar but independent studies. If most of these similar studies reach a similar statistically valid conclusion, a systematic review is unlikely to contribute substantially to the existing knowledge base for a particular topic. Systematic reviews become valuable when they increase the statistical power for analysis of a particular hypothesis through the pooling of data. An example of this would be the systematic review and meta-analysis comparing hemiarthroplasty and total shoulder arthroplasty in the treatment of glenohumeral osteoarthritis performed by Bryant et al.¹ Many of the statistical relationships evaluated in the individual studies included in their review failed to achieve significance. Collectively, however, the studies reviewed provided sufficient power to achieve statistical significance, yielding conclusions not provided by the individual studies. The findings of this systematic review clearly contributed to the knowledge base on treatment of glenohumeral osteoarthritis.

When authors consider undertaking a systematic review, the first question that should be considered is, "Is the review needed?" The review is unlikely to yield significant additional information if most studies evaluating the hypothesis yield similar conclusions. Second, the review should provide enough statistical power to arrive at meaningful conclusions. A review of a handful of case reports is unlikely to result in a publishable systematic review. Third, a systematic review should provide the reader with information and conclusions not obtained by reviewing the original articles. Last, a conclusion simply stating, "more research is needed on this topic" does not make a publishable systematic review. This is usually apparent by reviewing the available literature.

In conclusion, although many systematic reviews provide useful information, not all of these should be published. When an investigator performs a systematic review and concludes only that, "better studies are needed," this usually does not merit publication but can serve as a

springboard for the investigator to design and perform the needed studies. The main value of systematic reviews is to strengthen or clarify conclusions previously published on a particular topic by increasing the statistical power through collective analysis. If the systematic review does not accomplish this, the authors should reconsider submitting the review for publication.

Reference

1. Bryant D, Litchfield R, Sandow M, Gartsman GM, Guyatt G, Kirkley A. A comparison of pain, strength, range of motion, and functional outcomes after hemiarthroplasty and total shoulder arthroplasty in patients with osteoarthritis of the shoulder. A systematic review and meta-analysis. *J Bone Joint Surg Am* 2005;87:1947-56.